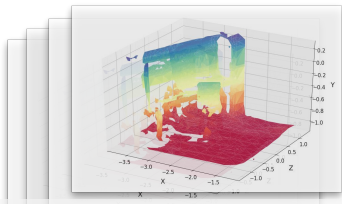
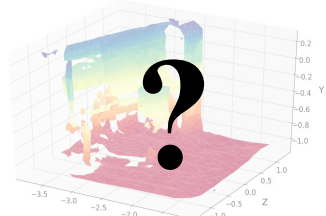


## Step 1: Building Reference Set



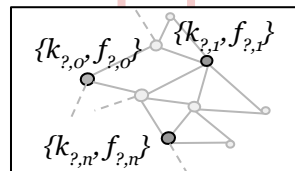
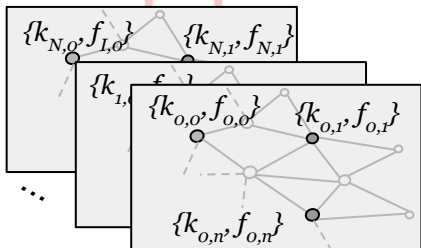
3D point cloud of reference spaces

## Step 2: Query Matching



Point cloud of Query space  $S_*$

*Extraction of 3D keypoints and descriptors*



Query descriptors

Reference set of descriptors

$\{\{k_{o,o}, f_{o,o}\}, \{k_{o,i}, f_{o,i}\}, \dots, \{k_{o,m}, f_{o,m}\}\}$

$\{\{k_{1,o}, f_{1,o}\}, \{k_{1,i}, f_{1,i}\}, \dots, \{k_{1,m}, f_{1,m}\}\}$

$\vdots$

$\{\{k_{N,o}, f_{N,o}\}, \{k_{N,i}, f_{N,i}\}, \dots, \{k_{N,m}, f_{N,m}\}\}$

*Descriptor Matching*

Matching Score

$H: i^* = 0 \mid S_i$

$H: i^* = 1 \mid S_i$

$\vdots$

$H: i^* = N \mid S_i$

